DRAFT Lake Washington - Tier I - Initial Habitat Project List
Includes Potential Restoration And Protection Projects

Basinwide Recommendations:

Project #	Description
C602	Study lake lift stations for combined sewer overflows harm juvenile fish. Explore moving lift station intakes into deeper water and installing screens.

Section 1: Southern most part of Lake Washington Near Cedar River Mouth
Restoration & Protection

Technical Hypothesis: *Focus is fry migrants which are shallow-water dependent. Reduce bank hardening by replacing bulkheads and riprap with gently sloped, sandy beaches; Reconnect and enhance small creek mouths as rearing areas; Plant native, overhanging riparian vegetation; Reduce impact of docks to promote safe juvenile salmon migration and deter the aggregation of predators.*
Address predation effects at the mouth of the Cedar River and backwater area in lower Cedar River.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C264	1	1 of 7	new	**Enhance Mouth and Lower John's Creek:** Enhance lower channel to reduce predator habitat, restore riparian vegetation, and protect water quality and quantity from stormwater flows. Located in Gene Coulon Park.		Lots of fry seen in area. WDOT considering direct discharge of stormwater into John's Creek for I-405 expansion. Important to protect what we have: water quality, flows. Enhancement should aim to reduce predator habitat. Extensive planting was done when Park was created. Park is heavily used and any restoration project will need to allow continued recreational use of the site.	**H/M**	**M**
C265	1	1 of 7	new	**Enhance Mouth of Kennydale Creek:** in Gene Coulon Park. Project would enhance mouth, remove silt, and facilitate recruitment of sand and gravel. Should also protect shallow water delta.		The mouth has a good delta and there is a good gradient. There are fish (juvenile Chinook) at mouth but not in stream. Extensive planting was done when Park was created. Any restoration project will need to allow continued recreational use of the Park.	**H/M**	**H/M**
C266	1	1 of 7	new	**Shoreline restoration of WA Department of Natural Resources Property** as part of City of Renton's Sam Chisham Trail project. Remove a portion of flume (along lakeside), create shallow water habitat, protect existing cove, and plant overhanging riparian vegetation along shore.		Sam Chisham Trail is a Renton project to connect Cedar River trail to Gene Coulon Park. Money needed for habitat restoration component of the project. Shoreline restoration should not occur independent of trail construction. Might be done as mitigation for trail project.	**H**	**M**
C267	1	1 of 7	new	**Shoreline restoration between mouth of Cedar and Gene Coulon Park:** Explore options to work with private property owners to remove bulkheads, restore shallow water habitat and riparian vegetation.		Possible opportunity with Boeing redevelopment, but many years out.	**H**	**L**

C268	1	1 of 7	new	**Cedar River Delta:** Explore lowering/modifying delta to create more shallow water habitat, and reduce predation for juvenile Chinook by cutting trees lower.		Would require regular maintenance. Area has high bird predation on Chinook fry. Birds also a problem for airport safety. Uncertainty about project, more study required. Questions raised about the purpose of doing a project at the site if you don't want juvenile Chinook hanging out there anyway.	**M**	**L**
C269	1	1 of 7	new	**Shoreline Restoration West of Cedar Mouth:** Explore options to work with homeowners to remove bulkheads, conversion of nearshore habitat to shallow beach and restore riparian vegetation. Reduce number of docks by using community docks.		Work with private landowners and need to explore options for incentive programs such as PBRS to encourage participation.	**H**	**L**
C270	1	1 of 7	new	**Explore opportunities to restore small creek mouths**, remove bulkheads and reduce number of docks by developing community docks throughout section 1.		Restore mouths of small creeks in Section 1, bulkhead removal and community dock construction, replacing individual docks.	**H**	**L**

Section 2: Southern end Mercer Island, Mouth of Mapes Creek and May Creek

Restoration & Protection

Technical Hypothesis: *Focus is fry migrants which are shallow-water dependent. Reduce bank hardening by replacing bulkheads and riprap with gently sloped, sandy beaches; Reconnect and enhance small creek mouths as rearing areas; Plant native, overhanging riparian vegetation; Reduce impact of docks to promote safe juvenile salmon migration and deter the aggregation of predators.*

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C271	2	2 of 7	P6, P10	**Mouth of Mapes Creek Restoration:** Restore mouth of Mapes Creek, which is currently in a culvert that empties into deep water in Lake Washington. Use as demonstration project and evaluate stability, sedimentation rates, and juvenile/adult use and predation. Developing an experimental stormwater treatment system is being considered as part of this project. Proposed City of Seattle project.		Concerns about cutthroat predation in bay. Convergence pool possible even if cannot create delta. Corps funding uncertain.	**H/M**	**M**
C272	2	2 of 7	new	**Rainer Beach Lake Park:** Removal of marina and bulkhead, regrading the shoreline to a gentle slope, and placing fine-grained substrate. Remove invasive vegetation and add native overhanging vegetation. Protect existing high quality shoreline habitat in park. From Seattle Shoreline Park Inventory and Habitat Assessment.		Docks to be removed, parking lot removed and create shoreline habitat. 700 ft. of habitat. Good number of Chinook using the area.	**H**	**H**

C273	2	2 of 7	new	**Pritchard Island Beach:** In northern reach, remove concrete bulkhead and regrade shoreline to gentle slope. Add fine substrate where needed. Remove invasive vegetation and plant native vegetation. Swim beach would be left intact. From Seattle Shoreline Park Inventory and Habitat Assessment.		Extensive riparian vegetation restoration done on south part. Project could set an example.	**H/M**	**H/M**
C274	2	2 of 7	new	**Explore buyout between Rainier Beach Park and Beer Sheva**. Connect and restore wetland behind Pritchard Island.		Would be expensive.	**L**	**L**
C275	2	2 of 7	new	**Martha Washington Park:** Regrade shoreline to gentle slope, add fine-grained beach substrate, remove riprap and rock armoring. Scallop shoreline edge to enhance habitat diversity and avoid damaging large cottonwood trees. Plant native vegetation. From Seattle Shoreline Park Inventory and Habitat Assessment.		Bulkhead removal project in southern portion funded in '04-'05. Benefit of the project limited by small size.	**M**	**H**
C276	2	2 of 7	new	**Mouth of Taylor Creek:** Remove lumber debris that provides bass habitat. Explore restoration of mouth.		Creek may be used by cutthroat, therefore too large to restore without increasing predation risk on Chinook. Removal of treated wood from old mill removes refuge habitat for later predators. Chinook there at earlier time. Creek flows through 3 private properties with lawns.	**L**	**M/L**
C277	2	2 of 7	new	**Restoration of Mouth of May Creek:** Restore mouth and lower reaches May Creek. Increase beach, set back banks, plant riparian buffers and add LWD to improve habitat for juvenile Chinook.		There is a development proposal for site that proposes some restoration of creek buffers and mouth (easier at mouth). EIS done on project, so may be hard to do more restoration than is already planned. Currently May Creek is dredged annually. In the future maintenance will probably cease. Need to maximize Chinook and minimize cutthroat with development of beach and placement of LWD. Area zoned/plotted for single family.	**H/M**	**M**
C278	2	2 of 7	new	**Port Quindal Shoreline Restoration and Site Cleanup:** restore shoreline, cleanup hazardous material on site and cap with sand. Explore restoration of small tributary and its mouth on the site.		Restoration of tributary and its mouth may not be possible due to hazardous materials on site (part of site is a Superfund site).	**M**	**L**
C279	2	2 of 7	new	South end of island is Chinook rearing habitat. **Work with private landowners to remove bulkheads, create beaches and reduce the number of docks** through the development of community docks.			**M**	**L**

Section 3: South of I-90 including East and West Channel of Mercer Island, Seward Park and Mercer Slough

Restoration & Protection

Technical Hypothesis: *Area used by large portion of fingerling/parr and small portion of fry. Emphasis on reducing impact of docks to promote safe juvenile migration and deter aggregation of predators; Plant native, overhanging riparian vegetation; For fry, bank hardening should be reduced by replacing bulkheads and riprap with gently sloped, sandy beaches; Small creek mouths should be reconnected/enhanced. However similar efforts for fry migrants to the south should have priority.*

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C280	3	5 of 7	P1	**Seward Park Shoreline Restoration:** Restore approximately 2,000 feet of shoreline along Bailey Peninsula in Seward Bay by putting in finer substrate and overhanging vegetation (potential City of Seattle project).		1,500 feet funded by KCD to be done in '04. 500-1,000 feet unfunded on SE shore of park. Placed fine sediments may move with wave action - long term maintenance issue. Will reduce sculpin habitat. May be good location to experiment with restoration techniques.	**M**	**H**
C281	3	5 of 7	P4	**Lake Washington Boulevard South:** Control invasive weeds at several locations and re-establish native vegetation (potential City of Seattle project). Remove debris along the water's edge in the north portion, from Mount Baker Park to Stan Sayres Park. Grade the shoreline, add beach gravels, and plant native riparian shrubs to return the shoreline to natural conditions (potential City of Seattle project).		Section 3 is migration zone. Fry seen here 1-2 meters off bank.	**M/L**	**M**
C282	3	5 of 7	new	**Explore options to restore small creek mouths** on west and east side of Mercer Island.		Prioritize mouths that are not pipes.	**L**	**L**
C283	3	5 of 7	new	**Groveland Park:** Explore opportunities for restoration.		Check with Mercer Island. Water quality may be a problem if drains highway versus forested ravine.	**M/L**	**M/L**
C284	3	5 of 7	new	**Clarke Beach Park:** Explore daylighting and restoration of creek mouth in park.		There was some debate of how or if Chinook will use Mercer Island Sites if restored. Rating reflects the small number of fish that do use Mercer Island.	**M/L**	**M/L**
C285	3	5 of 7	new	**Newcastle Beach Park:** Remove bank hardening and bulkheads, plant riparian vegetation and protect existing riparian area.			**M**	**H**
C286	3	5 of 7	new	**Remove Wall Under I-90:** Remove creosote wall under I-90. Leaches toxics into mouth of Mercer Slough.		Pipelines in area may limit restoration opportunities. Need to research who maintains the wall to help determine feasiblity.	**M**	**?**

Section 4: Between 520 and I-90

Restoration & Protection

Technical Hypothesis: *Focus is on parr/fingerling migrants, which are not as shallow-water dependent as fry.*
Reduce predation risks by reducing impact of docks on juvenile salmon migration and deterring aggregation of predators.

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C287	4	6 of 7	P3	**Lake Washington Boulevard:** Remove concrete debris and blackberry bushes, regrade, and re-establish native trees and shrubs on the shoreline boulevard from East Pine Street to the Madrona Drive intersection (potential City of Seattle project).		Project fits recommendation but low priority.	**L**	**M**
C288	4	6 of 7	new	**Chism Park Shoreline Restoration:** Remove bulkhead and place gravels.		Bellevue submitted for Corps GI.	**M/L**	**H**
C289	4	6 of 7	new	**Enatai Park Shoreline Restoration:** Explore potential to remove bulkhead and place gravels.		Area gets heavy boat wake and recreational use. Bellevue Parks may not be supportive of riprap removal here	**L**	**L**
C290	4	6 of 7	new	**Medina Beach Park:** Shoreline restoration for approximately 1/3 of park as part of park upgrade project. Will include riparian revegetation and area will be off-limits for swimmers and boats.		Work expected to be done in 2005 or 2006, but needs approval from City Council still. Includes replacing bulkhead, repairing two docks for pedestrian use. Docks are to be "fish friendly". Will improve swimming beach as well.	**L**	**H/M**

Section 5: Montlake Cut including Union Bay from Madison Park Beach to Webster Point

Restoration & Protection

Technical Hypothesis: *All fish must pass through area, so very important. Focus is on parr/fingerling migrants, which are not as shallow-water dependent as fr as well as adults. Remove docks to reduce predation risks (this may be the most important area to remove docks). Reduce impacts (e.g. pollution, contaminants from marinas and industrial areas. Improve areas with severely degraded habitat.*

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C291	5	3 of 7	new	**Montlake Cut/ Union Bay:** Protect water quality from runoff from 520.		WDOT 520 expansion an issue. May have funds for researching pollution prevention.	**H**	**H/M**
C292	5	3 of 7	new	**Webster Point:** Important area for predation. Need to deter aggregation of predators, especially bass. Explore reducing number of docks - establish community docks.		Need to study how fish move through Union Bay, Montlake Cut and research ways to reduce predation risk. Potentially add Madison park? Also need to study whether or not extensive non-native lily pads in area increase predation risk.	**M**	**L**

Section 6: North of 520 Including Sand Point, Thorton Creek Mouth, Yarrow Bay and Juanita Bay

Restoration & Protection

Technical Hypothesis: *Focus is on parr/fingerling migrants, which are not as shallow-water dependent as fry.*
Reduce predation risks by reducing impact of docks on safe juvenile salmon migration and to deter the aggregation of predators.
Reduce impacts (e.g. pollution, contaminants) from marinas and industrial areas. Improve severely degraded areas.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C293	6	7 of 7	P5	**Magnuson Park Shoreline North:** Remove dumped material, concrete, and other unnecessary shoreline hardening measures, regrade, install appropriate beach gravels, and plant with native trees and shrubs in the north end of the park (potential City of Seattle project).		NTAA P5 is actually two projects - divided here. Shoreline revegetation funded for North end part of project (Shoreline is full of Navy dump and covered with blackberries). Need to improve severely degraded area. Project is partially funded and partially designed.	**L**	**H**
C294	6	7 of 7	part of P5	**Magnuson Park Shoreline South:** Remove dumped material, concrete, and other unnecessary shoreline hardening measures, regrade, install appropriate beach gravels, and plant with native trees and shrubs in the south end of the park (potential City of Seattle project).		Shoreline is full of Navy dump and covered with blackberries. Point project is unfunded and unscheduled.	**L**	**M**
C295	6	7 of 7	new	**Matthews Beach:** Restore creek mouth at NE 80th to original location.		Creek is a Chinook "sink" - do not want to enhance for returning adults.	**L**	**L**
C296	6	7 of 7	new	**Juanita Bay Beach:** Explore restoration of creek mouth, return to more natural outlet. Remove armoring.			**L**	**L**

Section 7: North End of Lake, Including Mouths of MacLeer, Lyons, Sammamish River, Tracey Owen Park (East to West line starts at southern end of St. Edwards Park)

Restoration & Protection

Technical Hypothesis: *Focus is fry migrants which are shallow-water dependent. Reduce bank hardening by replacing bulkheads and riprap with gently slope*
Reconnect and enhance small creek mouths as rearing areas; Plant native, overhanging riparian vegetation;
Reduce predation risks by reducing impact of docks on safe juvenile salmon migration and to deter the aggregation of predators.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C297	7	4 of 7	P8	**Sammamish River Mouth and Inglewood Golf Course:** Restore wetlands at mouth of Sammamish River (south side of mouth), remove invasive, non-native plants and plant native riparian vegetation.		North side of mouth is historic landfill, so there are water quality issues with doing restoration on Northside. Shoreline is linear blackberry patch. Wetlands owned by King County.	**M**	**M**

C298	7	4 of 7	new	**Tracy Owen Station Park Shoreline Restoration:** Shoreline near the mouth of the Sammamish River is degraded by the presence of weedy and invasive species, erosion, and shoreline armoring. A City of Kenmore project could explore removal of wood waste from area - potential bass habitat and bad for benthic conditions. Project may include beach creation in future. The proposed project could also restore the shoreline by removing invasive plant species, planting native vegetation, and replacing existing shoreline armoring with bioengineered stabilization features.		Site is a tangle of willows, with open grass to the water. City of Kenmore is ready/interested in doing the project.	**M/L**	**M**
C299	7	4 of 7	new	**Kenmore Marina:** Improve pollution control at marina. In critical location right at mouth of Sammamish River.		Owner's willingness unknown.	**H/M**	**M**
C300	7	4 of 7	new	**O.O. Denny Park Shoreline Restoration:** Remove bulkhead, plant riparian vegetation. Explore restoration of Denny Creek mouth.		Park is heavily used, so may have conflict with recreational uses. Restoration at mouth could increase predation risk.	**M**	**M**
C301	7	4 of 7	new	**St. Edwards State Park:** Protect existing high quality, natural shoreline in park.			**H**	**H**
C302	7	4 of 7	new	**Explore opportunities to restore riparian vegetation** and reduce number of docks by working with private property owners in section.			**H/M**	**L**
C303	7	4 of 7	new	**Explore opportunities to restore mouths of small tributaries** in this section, including MacLeer Creek. Will require working with private property owners on revegetation.		Many of small tributaries are steep, in pipes. Low feasibility. MacLeer Creek is a Chinook "sink". Avoid attracting more Chinook into creek.	**M/L**	**L**